

REMARKS/ARGUMENTS

In the Office Action mailed January 2, 2008, claims 1-9 were rejected. In response, Applicant hereby requests reconsideration of the application in view of the amendments and the below-provided remarks. No claims are canceled.

For reference, the preamble of each of the claims is amended to clarify the subject matter of the preamble. Claim 1 is also amended to delete the letter designations “a” and “b” from the limitations. Claim 3 is also amended to refer to “the ground,” as suggested by the Examiner. Claim 5 is also amended to correct a typographical error and to add a period at the end of the claim. Claim 9 is also amended to clarify the language of the claim and to place the claim in independent form.

Additionally, claims 10-15 are added. In particular, claims 10, 12, and 14 recite the first and second elongated structures have a substantially consistent width. These claims are supported, for example, by the drawings of Figs. 1 and 3, which show the first and second elongated structures of each pair of resonator structures as having substantially consistent widths. Claims 11, 13, and 15 recite the first resonator elements are independently connected to independent feed lines to filter received signals into separate paths corresponding to different frequency bands. These claims are supported, for example, by the subject matter described at page 3, line 20, through page 4, line 3, of the specification.

Objections to the Specification

The Office Action suggests that the specification should include a paragraph to reference the parent PCT application. Applicant submits that the specification is amended to add the requested paragraph. Accordingly, Applicant respectfully requests that the objection to the specification be withdrawn.

Objections to the Claims

The Office Action objected to claim 5 because of an informality. Applicant submits that claim 5 is amended to recite “or” rather than “ore,” as suggested by the Examiner. Accordingly, Applicant respectfully requests that the objection to claim 5 be withdrawn.

Claim Rejections under 35 U.S.C. 112, second paragraph

Claim 3 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, claim 3 was rejected for reference to the “ground,” without clarification as to the relationship with the “ground” recited in claim 1. Applicant submits that claim 3 is amended to refer to “the ground” in order to clarify the reference to the ground of claim 1. Accordingly, Applicant respectfully requests that the rejection of claim 3 under 35 U.S.C. 112, second paragraph, be withdrawn.

Claim Rejections under 35 U.S.C. 102 and 103

Claims 1-5 and 8-9 were rejected under 35 U.S.C. 102(b) as being anticipated by Nagumo et al. (U.S. Pat. No. 6, 433,745 B1, hereinafter Nagumo). Additionally, claims 6-7 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nagumo. However, Applicant respectfully submits that these claims are patentable over Nagumo for the reasons provided below.

Independent Claim 1

Claim 1 recites “each pair of resonator structures comprising a first resonator structure connected to a feed line and a second resonator structure having a connection to ground, each of the first and second resonator structures comprising an open end, the first and the second resonator structures being electrically isolated from each other and being arranged adjacent to each other, wherein the open ends of the first and second resonator structures of each pair of resonator structures are arranged adjacent to each other” (emphasis added).

In contrast, Nagumo does not disclose first and second resonator structures, of each of multiple pairs of resonator structures, with open ends that are arranged adjacent to each other. While Nagumo describes a surface mounted antenna with multiple radiation electrodes 8, 9, 20, and 21, and each of the radiation electrodes has a top end 8b, 9b, 20b, and 21b that is open-circuited, the open ends of the radiation electrodes are not arranged adjacent to each other. Rather, Nagumo states that there is “a large distance” between the feeding-side radiation electrode 7 (referring to structure in Fig. 1 that is similar to the structure in Fig. 4) and the non-feeding-side second radiation electrode 9, generally. Nagumo, col. 3, lines 65-67. Additionally, Nagumo states that the open-circuited ends of both radiation electrodes 7 and 9 are oriented to mutually opposite directions so that there is a large distance between the open-circuited ends. Nagumo, col. 3, line 67, to col. 4, line 3. Hence, Nagumo describes the open-the circuited ends of the radiation electrodes as being separated by “a large distance” from one another.

Fig. 4 depicts the described large separation distance between the open ends of each combination of feeding- and non-feeding-side radiation electrodes. In particular, the antenna structure illustrated in Fig. 4 shows that each of the open-circuited ends of the various radiation elements are located on separate surfaces of the surface-mounted antenna. More specifically, the open-circuited end of the non-feeding-side first radiation electrode 8 is located on the right side surface 2c; the non-feeding-side second radiation electrode 9 is located on the front side surface 2b; the feeding-side first radiation electrode 20 is located on the upper surface 2a; and the feeding-side second radiation electrode 21 is located on the left side surface 2e. In this manner, Fig. 4 illustrates each of the open-circuited ends of the radiation electrodes as being on separate surfaces of the antenna structure.

Since Nagumo discloses separating all of the open-circuited ends of the radiation electrodes, Nagumo does not disclose arranging the open ends of the radiation electrodes adjacent to each other. Therefore, Nagumo does not disclose all of the limitations of the claim because Nagumo does not disclose first and second resonator structures, of each of multiple pairs of resonator structures, with open ends that are arranged adjacent to each other. Accordingly, Applicant respectfully asserts claim 1 is patentable over Nagumo because Nagumo does not disclose all of the limitations of the claim.

Independent Claim 9

Applicant respectfully asserts independent claim 9 is patentable over Nagumo at least for similar reasons to those stated above in regard to the rejection of independent claim 1. In particular, claim 9 recites “wherein the first and the second resonator structures being electrically isolated from each other and being arranged adjacent to each other, wherein the open ends of the first and second resonator structures of each pair of resonator structures are arranged adjacent to each other” (emphasis added).

Here, although the language of claim 9 differs from the language of claim 1, and the scope of claim 9 should be interpreted independently of claim 1, Applicant respectfully asserts that the remarks provided above in regard to the rejection of claim 1 also apply to the rejection of claim 9. Accordingly, Applicant respectfully asserts claim 9 is patentable over Nagumo because Nagumo does not disclose first and second resonator structures, of each of multiple pairs of resonator structures, with open ends that are arranged adjacent to each other.

Dependent Claims

Claims 2-8 and 10-15 depend from and incorporate all of the limitations of the corresponding independent claims 1 and 9. Applicant respectfully asserts claims 2-8 and 10-15 are allowable based on allowable base claims. Additionally, each of claims 2-8 and 10-15 may be allowable for further reasons, as described below.

In regard to claims 10, 12, and 14, Applicant respectfully submits that claims 10, 12, and 14 are patentable over Nagumo because Nagumo does not disclose all of the limitations of the claims. Claim 10 recites “the first and second elongated structures have a substantially consistent width along the length of the first and second elongated structures” (emphasis added). Claims 12 and 14 recite similar limitations. In contrast, Nagumo does not disclose radiation elements having a substantially consistent width along the length of the radiation elements. Rather, as shown in Figs. 1, 4, and 7, each of the radiation elements has one or more meandering shapes with varying widths. Therefore, Nagumo does not disclose all of the limitations of the claims because Nagumo does not disclose radiation elements with substantially consistent widths. Accordingly,

Applicant respectfully asserts that claims 10, 12, and 14 are patentable over Nagumo because Nagumo does not disclose all of the limitations of the claims.

In regard to claims 11, 13, and 15, Applicant respectfully submits that claims 11, 13, and 15 are patentable over Nagumo because Nagumo does not disclose all of the limitations of the claims. Claim 11 recites “each of the first resonator elements are independently connected to independent feed lines to filter received signals into separate paths corresponding to different frequency bands” (emphasis added). Claims 13 and 15 recite similar limitations. It should be noted that the first resonator elements are each connected to a feed line, as recited in the corresponding independent claims. In contrast, Nagumo does not disclose multiple feeding-side radiation electrodes connected to independent feed lines. Rather, if the antenna of Nagumo is implemented with multiple feeding-side radiation electrodes, Nagumo merely describes the feeding-side radiation electrodes as being connected to a single feeding terminal 5. Moreover, although Nagumo describes various branching configurations for the radiation elements, Nagumo does not attempt to describe alternative connection configurations. Nagumo merely describes one or more feeding-side radiation electrodes connected to a single feeding terminal. Therefore, Nagumo does not disclose all of the limitations of the claims because Nagumo does not disclose multiple feeding-side radiation electrodes connected to independent feed lines. Accordingly, Applicant respectfully asserts that claims 11, 13, and 15 are patentable over Nagumo because Nagumo does not disclose all of the limitations of the claims.

CONCLUSION

Applicant respectfully requests reconsideration of the claims in view of the amendments remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-3444** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-3444** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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